

## RESTORATION OF THE PERINEAL PORTION OF THE URETHRA AFTER DESTRUCTION BY FRACTURE OF THE PELVIS.

BY HUGH CABOT, M.D.,

OF BOSTON, MASS.

To restore considerable gaps in the urethra resulting from stricture either of traumatic or inflammatory origin has long been a difficult problem in genito-urinary surgery. Its solution has been attempted by a great variety of methods, including grafting by the method of Thiersch, interposition of portions of the urethra taken from animals, plastic operations of various kinds and approximation of the remaining portions of the urethra by mobilization.

The following case with comments is submitted as a contribution in the possibility of extensive mobilization of the urethra:

P. E. R., age 20, was admitted to the Massachusetts General Hospital in the service of Dr. Mixter, April 9, 1907, one and a half hours after having been struck by a railroad train. At the time of admission he was in marked shock. The only serious injury found was a fracture of the pelvis, confined to the pubic portion (Fig. 1) and causing rupture of the urethra. A gum elastic catheter was inserted with some difficulty and drew 18 ounces of clear urine. On the following day there was complete retention of urine, the bladder was distended up to the umbilicus and several attempts at catheterization with various instruments failed. Operation was promptly done by Dr. G. W. W. Brewster. This consisted of a free perineal section, which disclosed a complete transverse rupture of the urethra in the bulbar portion, with a large extravasation of blood and urine. The finger in the wound could detect a sharp fragment of the pubic bone displaced downward for about an inch. After a tedious search the proximal end of the urethra could not be found, but the distended bladder was readily felt as a bulging mass behind the bone. This was punctured with a knife and a large rubber drainage tube inserted.

FIG. 1.

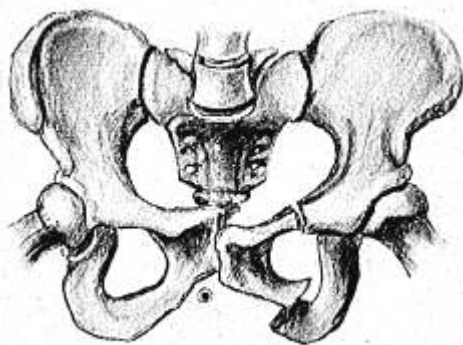


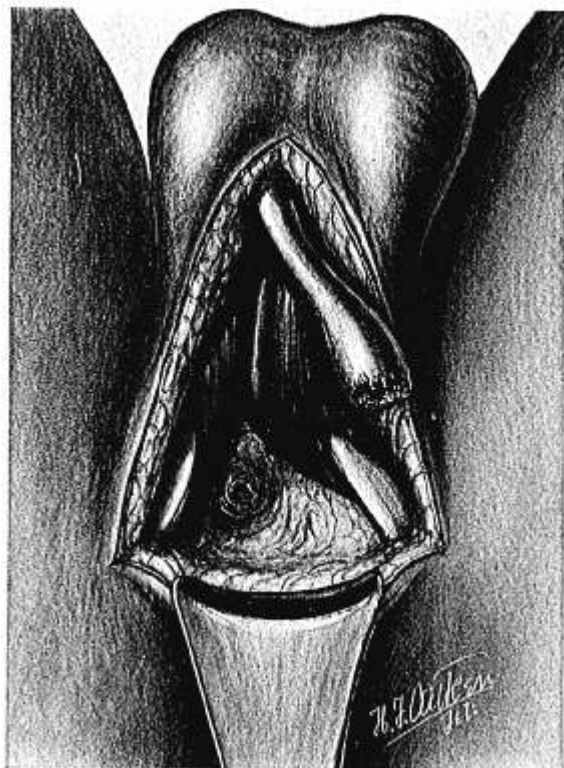
Diagram showing the fracture with resulting deformity.

FIG. 2.



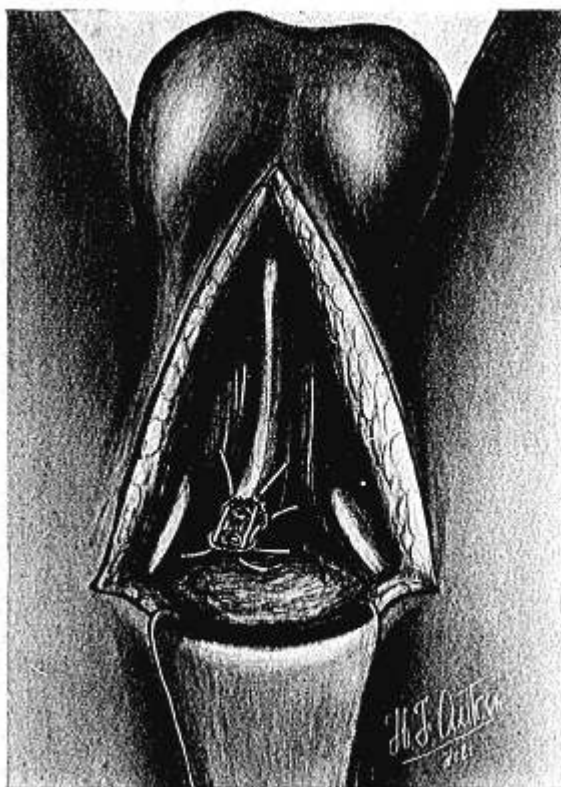
Note the position of the retracted ends of the urethra and the relations of the false passage.

FIG. 3.



Showing the amount of mobilization of the anterior urethra.

FIG. 4.



Showing method of suture.

He made a satisfactory convalescence. Drained freely through perineal wound until May 1, when the urine began to come freely through anterior urethra.

Discharged from hospital May 22, 1907, at which time No. 27 F. bougie would go readily to the bladder. Sound could not be passed, apparently on account of some irregularity in the urethra.

He was lost sight of until October 7, 1907, when he was admitted on account of acute retention. The bladder was distended to one inch below the umbilicus, and the urethra bore visible evidence of fruitless attempts to enter the bladder, made before admission. In view of failure at the time of previous operation to find the proximal end of the urethra, and of the present damaged condition of the tissues by recent instrumentation, it seemed best to open the bladder above the pubes and drain, before attempting to repair the continuity of the urethra.

*Operation.*—October 7 (Hugh Cabot).—Bladder opened by a suprapubic incision and drained. Just behind the vesical orifice of the urethra there was a small granulating area, evidently the site of the previous incision into the bladder. The finger passed into the vesical opening of the urethra brought up solidly against the back of the pubes, where it was displaced downward, the neck of the bladder being drawn upward behind the bone. The bladder was drained with a large rubber tube, about which it was tightly closed with inversion sutures.

After the acute swelling of the urethra had quieted down, it was explored with a full sized sound. This went freely to the penoscrotal angle, where it turned sharply backward and ended blindly against the front of the pubic arch. It thus appeared that the pubic arch, occupying a new position, lay between the severed ends of the urethra which had retracted upward and that the previous operation had substituted a false passage between these two points. The condition existing at this time is shown in Fig. 2.

On October 16, 9 days after the drainage operation, he was again etherized for the purpose of restoring the urethra if possible. The patient was placed in extreme lithotomy position with sand-bag under the pelvis. Curved incision from one tuberosity of the ischium to the other, passing about one and a half inches in front of the anus. Rectum freed from scar with con-

siderable difficulty, as it is in part adherent to the lower border of the displaced fragment of the pubes and thus lay between the severed ends of the urethra. After the rectum had been freed and pushed backward, the prostate could be made out lying behind the bone and was freed by blunt dissection, aided by downward pressure made by an assistant from within the bladder. The prostate was sufficiently mobilized so that it could be brought down below the bone and held there without tension. A vertical incision was then made over the bulbar portion of the urethra, and the anterior urethra freed from scar tissue and exposed for a distance of two and a half inches. The urethra was entirely freed from the surrounding tissues to the above penoscrotal angle. This mobilized portion was about two inches long (Fig. 3). It was then possible to approximate the divided ends of the urethra without tension. The prostatic end was steadied by two stay sutures and the divided ends of the urethra were then united on the roof with interrupted catgut sutures passed from without and not including the mucous membrane. No. 14 soft-rubber catheter was then passed from the meatus to the bladder, and the suture completed around this as a splint, the divided ends coming together without tension (Fig. 4).

The catheter was left in place until November 14, when both perineal and suprapubic wounds were tightly closed. On December 18 he was discharged from the hospital. At this time the urethra took a No. 27 F. webbing bougie without difficulty. Sounds could not be passed as the urethra made a sharp turn around the bony fragment of the pubes and the curve of the instrument would not follow it.

The patient was seen on April 14 at which time he was having very little difficulty in urination and the urethra took a No. 20 F. bougie without difficulty, though he has had no care since leaving hospital.

*Comments.*—This case is interesting chiefly as showing the extent to which the perineal and scrotal portions of the urethra can be mobilized without damage to their blood supply, and the size of the defects which may thus be bridged. The distance between the ends of the urethra at the time of operation was fully two inches. Mobilization of the prostate probably diminished this space at least one-half inch, so that

the gap ultimately filled was about one and a half inches. It might be expected that the complete isolation of the anterior urethra from behind forward would interfere with its blood supply far more than when it is mobilized from before backwards, as in Beck's operation for hypospadias.

Theoretically at least the destruction of the blood supply, when mobilized from behind, is much greater, but this case would suggest that the damage is neither serious nor permanent.

Success in thus bridging defects will depend largely upon the approximation of the divided ends without tension. If this cannot be done retraction will certainly follow, and a long fibrous stricture will result. The possibility of avoiding tension depends entirely upon free mobilization of the anterior segment, and in my own cases at least, difficulties in the past have depended upon failure to observe this precaution, because I feared to cut off the blood supply. If union takes place without stretching of the scar an annular stricture, which can be readily handled by dilatation, will result.

This method of restoring defects seems to me much superior to the use of animal tissue, or to Thiersch grafting. Where the former method is used it is not likely that all of them will "take," and the amount of scar tissue is therefore greater than that following direct suture.